PROCESS PERTURBATION TO MEASURED-MODELED METHOD FOR SEMICONDUCTOR DEVICE TECHNOLOGY MODELING

ABSTRACT OF THE DISCLOSURE

A method for modeling semiconductor devices which utilize a measured-to-modeled microscope as a fundamental analysis basis for constructing a physically-based model by correlating measured model performance changes to experimental device changes designed to controllably change physical aspects of the advise. The effects of the process perturbation can then be attributed to changes in measurable internal characteristics of the device. With thorough process perturbation to measured model PM^2 experimentation, the full range of device performance can be expressed in terms of the microscopes model-basis space, thus forming a single unified compact device technology model, able to accurately model measured performance changes over a relatively wide range of possible physical and environment changes to the device. The model is able to model internal device physical device operating mechanisms that are critical to the device technology, such as charge control in FET's or current control in BJT's.